

## Section 6-7: Problem Solving Skills: Patterns and Functions

**By the end of this lesson, you should be able to answer:**

- How do you find patterns when given a function?
- How do you find the function when given a pattern?

**Where you might see this in the real world:**

- Offices, chemistry, landscaping

Throughout the last few lessons, we have been working with creating tables from a given equation. If the equation represents a function, we can write it in function notation, replacing the  $y$  with our function notation.

All functions will form patterns. That means that anytime we see a pattern, we can work on creating a function to represent it. To work with these types of problems, we need to work with the Five-Step Plan:

1. **Read:** Ask questions to yourself to help understand the problem.
2. **Plan:** Come up with a way to go about solving the problem from previous methods you have learned.
3. **Solve:** Follow through the steps to solve the problem.
4. **Answer:** Write out your answer, making sure to label it correctly. Refer back to the original problem to find the units.
5. **Check:** Review your work and make sure your answer makes sense in the situation. If you are looking for the number of rolls you would have to buy as being  $-10$ , that does not make sense.

Example 1: An appliance store offers its sales staff a choice of weekly earning plans: a base salary of \$200 plus 7% commission on their sales or just 12% commission on their sales. What is the minimum amount of sales for which the commission only plan earns the salesperson a higher weekly income than the base salary plan?

Example 2: Which of the following equations fits the table?

<b><i>x</i></b>	0	1	2	3	4
<b><i>y</i></b>	0	3	12	27	48

a.  $y = x^3$       b.  $y = 2x^3$       c.  $y = 3x^3$       d.  $y = 3x^2$

The main thing here is to try and find a pattern that exists between our two variables. In example 2, we need to figure out what we do to  $x$  to get  $y$ . We can try multiplying, adding, squaring, etc. In this case, there are some possible equations given to us, which means we only have to test the points into each equation.

Example 3: Use the table to write a function rule.

<b><i>x</i></b>	2	4	6	8	10
<b><i>y</i></b>	5	9	13	17	21

Problem Set:

**"You can't wait for inspiration. You have to go after it with a club."  
- Jack London**